## This Page Is Inserted by IFW Operations and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

## IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents will not correct images, please do not report the images to the Image Problem Mailbox.

1. (Currently Amended) An organic electroluminescent (EL) device comprising an anode, a cathode, and one or more organic thin-film layers including a light-emitting layer sandwiched between the anode and the cathode, at least one of the organic thin-film layers including, singly, a perylene compound represented by a general formula [1] as follows:

wherein each of R<sup>1</sup> to R<sup>12</sup> independently represents a hydrogen atom, a halogen atom, hydroxy group, substituted or non-substituted amino group, nitro group, cyano group, substituted or non-substituted alkyl group, substituted or non-substituted alkenyl group, substituted or non-substituted styryl group, substituted or non-substituted cycloalkyl group, substituted or non-substituted alkoxy group, substituted or non-substituted aromatic hydrocarbon group, substituted or non-substituted aromatic heterocyclic group, substituted or non-substituted aralkyl group or substituted or non-substituted aryloxy group; any two of R<sup>1</sup> to R<sup>12</sup> may form a ring; however one or two of R<sup>1</sup> to R<sup>12</sup> is a diarylamino group represented by –NAr<sup>1</sup>Ar<sup>2</sup> (each of Ar<sup>1</sup> and Ar<sup>2</sup> represents substituted or non-substituted aromatic hydrocarbon group or substituted or non-substituted aromatic hydrocarbon group or substituted or non-substituted aromatic heterocyclic group), and at least one of the R<sup>1</sup> to R<sup>12</sup> other than the diarylamino group is a group with steric hindrance for suppressing aggregation of molecules,

wherein the group with steric hindrance included in the general formula [1] is a substituted or non-substituted alkyl group having not less than four carbon atoms, a substituted

or non-substituted cycloalkyl group, a substituted or non-substituted alkoxy group, a substituted or non-substituted aromatic heterocyclic group, a substituted or non-substituted aralkyl group or a substituted or non-substituted aryloxy group.

- 2. (Previously Presented) The organic EL device as defined in claim 1, wherein at least one of  $A^1$  and  $Ar^2$  has substituted or non-substituted styryl group as a substituent.
- 3. (Previously Presented) The organic EL device as defined in claim 1, wherein the organic thin-film layers have at least a light-emitting layer including the compound represented by the general formula [1] either singly or as a mixture.
- 4. (Previously Presented) The organic EL device as defined in claim 1, wherein the organic thin-film layers have at least a hole transporting layer including the compound represented by the general formula [1] either singly or as a mixture.
- 5. (Previously Presented) The organic EL device as defined in claim 1, wherein the organic thin-film layers have at least an electron transporting layer including the compound represented by the general formula [1] either singly or as a mixture.
- 6. (Previously Presented) The organic EL device as defined in claim 1, wherein the group with steric hindrance included in the general formula [1] is the substituted or non-substituted alkyl group, the substituted or non-substituted cycloalkyl group, the substituted or non-substituted alkoxy group, the substituted or non-substituted aromatic hydrocarbon group, the

substituted or non-substituted aromatic heterocyclic group, the substituted or non-substituted aralkyl group or the substituted or non-substituted aryloxy group.

7. (Currently Amended) An organic EL device comprising an anode, a cathode, and one or more organic thin-film layers including a light-emitting layer sandwiched between the anode and the cathode, at least one of the organic thin-film layers including, singly, a benzoperylene compound represented by a general formula [2] as follows:

$$R^{14}$$
  $R^{13}$   $R^{26}$   $R^{23}$   $R^{15}$   $R^{20}$   $R^{20}$   $R^{21}$   $R^{21}$   $R^{21}$   $R^{20}$   $R^{20}$ 

wherein each of R<sup>13</sup> to R<sup>26</sup> independently represents a hydrogen atom, a halogen atom, hydroxyl group, substituted or non-substituted amino group, nitro group, cyano group, substituted or non-substituted alkyl group having not less than four carbon atoms, substituted or non-substituted alkenyl group, substituted or non-substituted styryl group, substituted or non-substituted cycloalkyl group, substituted or non-substituted alkoxy group, substituted or non-substituted aromatic hydrocarbon group, substituted or non-substituted aromatic heterocyclic group, substituted or non-substituted aralkyl group or substituted or non-substituted aryloxy group; and two of R<sup>13</sup> to R<sup>26</sup> may form a ring; and at least one of R<sup>13</sup> to R<sup>26</sup> is a group with steric hindrance for suppressing aggregation of molecules,

wherein the group with steric hindrance included in the general formula [2] is a substituted or non-substituted alkyl group, a substituted or non-substituted cycloalkyl group, a substituted or non-substituted alkoxy group, a substituted or non-substituted aromatic heterocyclic group, a substituted or non-substituted aralkyl group, or a substituted or non-substituted aryloxy group.

- 8. (Currently Amended) The organic EL device as defined in claim 7, wherein at least one of R<sup>13</sup> to R<sup>26</sup> is a diarylamino group represented by –NAr<sup>1</sup>Ar<sup>2</sup> (each of Ar<sup>1</sup> and Ar<sup>2</sup> represents non-substituted aromatic hydrocarbon group or substituted aromatic heterocyclic group).
- 9. (Previously Presented) The organic EL device as defined in claim 8, wherein at least one of A<sup>1</sup> and Ar<sup>2</sup> has substituted or non-substituted styryl group as a substituent.
- 10. (Previously Presented) The organic EL device as defined in claim 7, wherein the organic thin-film layers have at least a light-emitting layer including the compound represented by the general formula [2] either singly or as a mixture.
- 11. (Previously Presented) The organic EL device as defined in claim 7, wherein the organic thin-film layers have at least a hole transporting layer including the compound represented by the general formula [2] either singly or as a mixture.

- 12. (Previously Presented) The organic EL device as defined in claim 7, wherein the organic thin-film layers have at least an electron transporting layer including the compound represented by the general formula [2] either singly or as a mixture.
- 13. (Previously Presented) The organic EL device as defined in claim 1, wherein the group with steric hindrance included in the general formula [2] is the substituted or non-substituted alkyl group, the substituted or non-substituted cycloalkyl group, the substituted or non-substituted aromatic hydrocarbon group, the substituted or non-substituted or non-substituted or non-substituted or non-substituted aromatic heterocyclic group, the substituted or non-substituted aralkyl group or the substituted or non-substituted aryloxy group.
- 14. (Previously Presented) The organic EL device as defined in claim 1, wherein the group with steric hindrance is adamantyloxy, adamantyl, t-butyl or t-butoxy.
- 15. (Previously Presented) The organic EL device as defined in claim 1, wherein the steric hindrance group is adamantyloxy or t-butoxy.
- 16. (Previously Presented) The organic EL device as defined in claim 1, wherein at least two of  $R^{13}$  to  $R^{26}$  are adamantyloxy or t-butoxy.
- 17. (Previously Presented) The organic EL device as defined in claim 7, wherein the group with steric hindreance is adamantyloxy, adamantyl, t-butyl, t-butoxy or phyenyloxy.

18. (Currently Amended) An organic EL device comprising an anode, a cathode, and one or more organic thin-film layers including a light-emitting layer sandwiched between the anode and the cathode, at least one of the organic thin-film layers including a benzoperylene compound represented by a general formula [2] as follows:

$$R^{14}$$
  $R^{13}$   $R^{26}$   $R^{23}$   $R^{15}$   $R^{20}$   $R^{20}$   $R^{21}$   $R^{16}$   $R^{18}$   $R^{19}$   $R^{20}$   $R^{20}$ 

wherein each of R<sup>13</sup> to R<sup>26</sup> independently represents a hydrogen atom, a halogen atom, hydroxyl group, substituted or non-substituted amino group, nitro group, cyano group, substituted or non-substituted [aklyl] alkyl group having not less than four carbon atoms, substituted or non-substituted alkenyl group, substituted or non-substituted styryl group, substituted or non-substituted cycloalkyl group, substituted or non-substituted alkoxy group, substituted or non-substituted aromatic hydrocarbon group, substituted or non-substituted aromatic heterocyclic group, substituted or non-substituted aralkyl group or substituted or non-substituted aryloxy group; and two of R<sup>13</sup> to R<sup>26</sup> may form a ring; and at least one of R<sup>13</sup> to R<sup>26</sup> is a group with steric hindrance for suppressing aggregation of molecules,

wherein the group with steric hindrance included in the general formula [2] is a substituted or non-substituted alkyl group, a substituted or non-substituted cycloalkyl group, a substituted or non-substituted alkoxy group, a substituted or non-substituted aromatic

heterocyclic group, a substituted or non-substituted aralkyl group, or a substituted or non-substituted aryloxy group,

wherein the group with steric hindrance is adamantyl.

19. (Previously presented) An organic electroluminescent (EL) device comprising an anode, a cathode, and one or more organic thin-film layers including a light-emitting layer sandwiched between the anode and the cathode, at least one of the organic thin-film layers including a perylene compound represented by a general formula [1] as follows:

$$R^{3}$$
 $R^{4}$ 
 $R^{5}$ 
 $R^{6}$ 
 $R^{7}$ 
 $R^{8}$ 
 $R^{10}$ 
 $R^{9}$ 
 $R^{9}$ 

wherein each of R<sup>1</sup> to R<sup>12</sup> independently represents a hydrogen atom, a halogen atom, hydroxy group, substituted or non-substituted amino group, nitro group, cyano group, substituted or non-substituted alkyl group, substituted or non-substituted alkenyl group, substituted or non-substituted styryl group, substituted or non-substituted cycloalkyl group, substituted or non-substituted alkoxy group, substituted or non-substituted aromatic hydrocarbon group, substituted or non-substituted aromatic heterocyclic group, substituted or non-substituted aralkyl group or substituted or non-substituted aryloxy group; any two of R<sup>1</sup> to R<sup>12</sup> may form a ring; however, one or two\_of R<sup>1</sup> to R<sup>12</sup> is a diarylamino group represented by –NAr<sup>1</sup>Ar<sup>2</sup> (each of Ar<sup>1</sup> and Ar<sup>2</sup> represents substituted or non-substituted aromatic hydrocarbon group or substituted or non-

substituted aromatic heterocyclic group), and at least one of the R<sup>1</sup> to R<sup>12</sup> other than the diarylamino group is a group with steric hindrance for suppressing aggregation of molecules,

wherein the group with steric hindrance included in the general formula [1] is a substituted or non-substituted alkyl group having not less than four carbon atoms, a substituted or non-substituted cycloalkyl group, a substituted or non-substituted aralkyl group or a substituted or non-substituted aryloxy group,

wherein the perylene compound represented by formula [1] is used in combination with other compounds.

20. (Previously presented) An organic electroluminescent (EL) device comprising an anode, a cathode, and one or more organic thin-film layers including a light-emitting layer sandwiched between the anode and the cathode, at least one of the organic thin-film layers including a perylene compound represented by a general formula [1] as follows:

$$R^{3}$$
 $R^{4}$ 
 $R^{5}$ 
 $R^{6}$ 
 $R^{7}$ 
 $R^{8}$ 
 $R^{11}$ 
 $R^{10}$ 
 $R^{9}$ 
 $R^{9}$ 

wherein each of R<sup>1</sup> to R<sup>12</sup> independently represents a hydrogen atom, a halogen atom, hydroxy group, substituted or non-substituted amino group, nitro group, cyano group, substituted or non-substituted alkyl group, substituted or non-substituted alkenyl group, substituted or non-substituted styryl group, substituted or non-substituted cycloalkyl group, substituted or non-

substituted alkoxy group, substituted or non-substituted aromatic hydrocarbon group, substituted or non-substituted aralkyl group or substituted or non-substituted aryloxy group; any two of R<sup>1</sup> to R<sup>12</sup> may form a ring; however, one or two of R<sup>1</sup> to R<sup>12</sup> is a diarylamino group represented by –NAr<sup>1</sup>Ar<sup>2</sup> (each of Ar<sup>1</sup> and Ar<sup>2</sup> represents substituted or non-substituted aromatic hydrocarbon group or substituted or non-substituted aromatic hydrocarbon group or substituted or non-substituted aromatic heterocyclic group), and at least one of the R<sup>1</sup> to R<sup>12</sup> other than the diarylamino group is a group with steric hindrance for suppressing aggregation of molecules,

wherein the group with steric hindrance included in the general formula [1] is a substituted or non-substituted alkyl group having not less than four carbon atoms, a substituted or non-substituted cycloalkyl group, a substituted or non-substituted alkoxy group, a substituted or non-substituted aralkyl group or a substituted or non-substituted aralkyl group or a substituted or non-substituted aryloxy group,

wherein the perylene compound represented by formula [1] is used in alone and not in combination with other compounds.

Please add new claims 21, 22, 23 and 24 as follows:

21. (New) An organic electroluminescent (EL) device comprising an anode, a cathode, and one or more organic thin-film layers including a light-emitting layer sandwiched between the anode and the cathode, the organic thin-film layers including, as a mixture, a perylene compound represented by a general formula [1] as follows:

$$R^{3}$$
 $R^{4}$ 
 $R^{5}$ 
 $R^{6}$ 
 $R^{7}$ 
 $R^{8}$ 
 $R^{11}$ 
 $R^{10}$ 
 $R^{9}$ 
 $R^{10}$ 

wherein each of R<sup>1</sup> to R<sup>12</sup> independently represents hydrogen atom, halogen atom, hydroxy hydroxyl group, substituted or non-substituted amino group, nitro group, cyano group, substituted or non-substituted alkenyl group, substituted or non-substituted styryl group, substituted or non-substituted cycloalkyl group or substituted or non-substituted aralkyl group; any two of R<sup>1</sup> to R<sup>12</sup> may form a ring; however, at least one and at most two of R<sup>1</sup> to R<sup>12</sup> is a diarylamino group represented by –NAr<sup>1</sup>Ar<sup>2</sup> (each of Ar<sup>1</sup> and Ar<sup>2</sup> represents non-substituted aromatic hydrocarbon group or substituted or non-substituted aromatic heterocyclic group), and at least one of the R<sup>1</sup> to R<sup>12</sup> other than the diarylamino group is a group with steric hindrance for suppressing aggregation of molecules.

- 22. (New) The organic EL device as defined in claim 21, wherein at least one of Ar<sup>1</sup> and Ar<sup>2</sup> includes has substituted or non-substituted styryl group as a substituent.
- 23. (New) An organic EL device comprising an anode, a cathode, and one or more organic thin-film layers including a light-emitting layer sandwiched between the anode and the cathode, the organic thin-film layers including, as a mixture, a benzoperylene compound represented by a general formula [2] as follows:

wherein each of  $R^1$  to  $R^{12}$  independently represents hydrogen atom, halogen atom, hydroxyl group, substituted or non-substituted amino group, nitro group, cyano group, substituted or non-substituted alkenyl group, substituted or non-substituted styryl group, substituted or non-substituted cycloalkyl group or substituted or non-substituted aralkyl group; any two of  $R^1$  to  $R^{12}$  may form a ring; however, at least one and at most two of  $R^1$  to  $R^{12}$  is a diarylamino group represented by  $-NAr^1Ar^2$  (each of  $Ar^1$  and  $Ar^2$  represents non-substituted aromatic hydrocarbon group or substituted or non-substituted aromatic heterocyclic group), and at least one of the  $R^1$  to  $R^{12}$  other than the diarylamino group is a group with steric hindrance for suppressing aggregation of molecules.

24. (New) The organic EL device as defined in claim 23, wherein at least one of R<sup>13</sup> to R<sup>26</sup> is diarylamino group represented by -Nar<sup>1</sup>Ar<sup>2</sup> (each of Ar<sup>1</sup> to Ar<sup>2</sup> represents non-substituted aromatic hydrocarbon group or substituted or non-substituted aromatic heterocyclic group), and the group with steric hindrance is other than the diarylamino group.

Prior to the taking up of this application for re-consideration, please amend the application in accordance with the attached supplemental claim amendments further to applicant's prior reply to the Office Action dated June 9, 2003. In view of the foregoing, applicant respectfully requests allowance of pending claims. However, if there are any remaining issues, Examiner is encouraged to call Applicants' Attorney at (312) 661-2100 to resolve such issues in an expeditious manner.

	Respectfully submitted,
Dated:	Perry J. Hoffman
	Registration No. 37,150
	MICHAEL BEST & FRIEDRICH LLC
	401 North Michigan Avenue, Suite 1900
	Chicago, IL 60611
	(312) 222-2100
	(312) 222-0818 (fax)

S:\CLIENT\201558\0014\C0271976.1

Prior to the taking up of this application for re-consideration, please amend the application in accordance with the attached supplemental claim amendments further to applicant's prior reply to the Office Action dated June 9, 2003. In view of the foregoing, applicant respectfully requests allowance of pending claims. However, if there are any remaining issues, Examiner is encouraged to call Applicants' Attorney at (312) 661-2100 to resolve such issues in an expeditious manner.

Respectfully submitted,

Perry J. Hoffman

Registration No. 37,150

MICHAEL BEST & FRIEDRICH LLC 401 North Michigan Avenue, Suite 1900

Chicago, IL 60611 (312) 222-2100 (312) 222-0818 (fax)

S:\CLIENT\201558\0014\C0271976.1